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Weiss et al.

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[45] **Date of Patent: Jul. 13, 1999**

[54] **SIDING CORNER CONNECTOR AND METHOD**

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[22] Filed: **Aug. 11, 1997**

[51] **Int. Cl.**[6] **E04C 2/38**

[52] **U.S. Cl.** **52/745.16**; 52/656.9; 52/656.7; 52/212

[58] **Field of Search** 52/656.1, 656.7, 52/656.9, 288.1, 278.1, 475.1, 476, 212, 745.16

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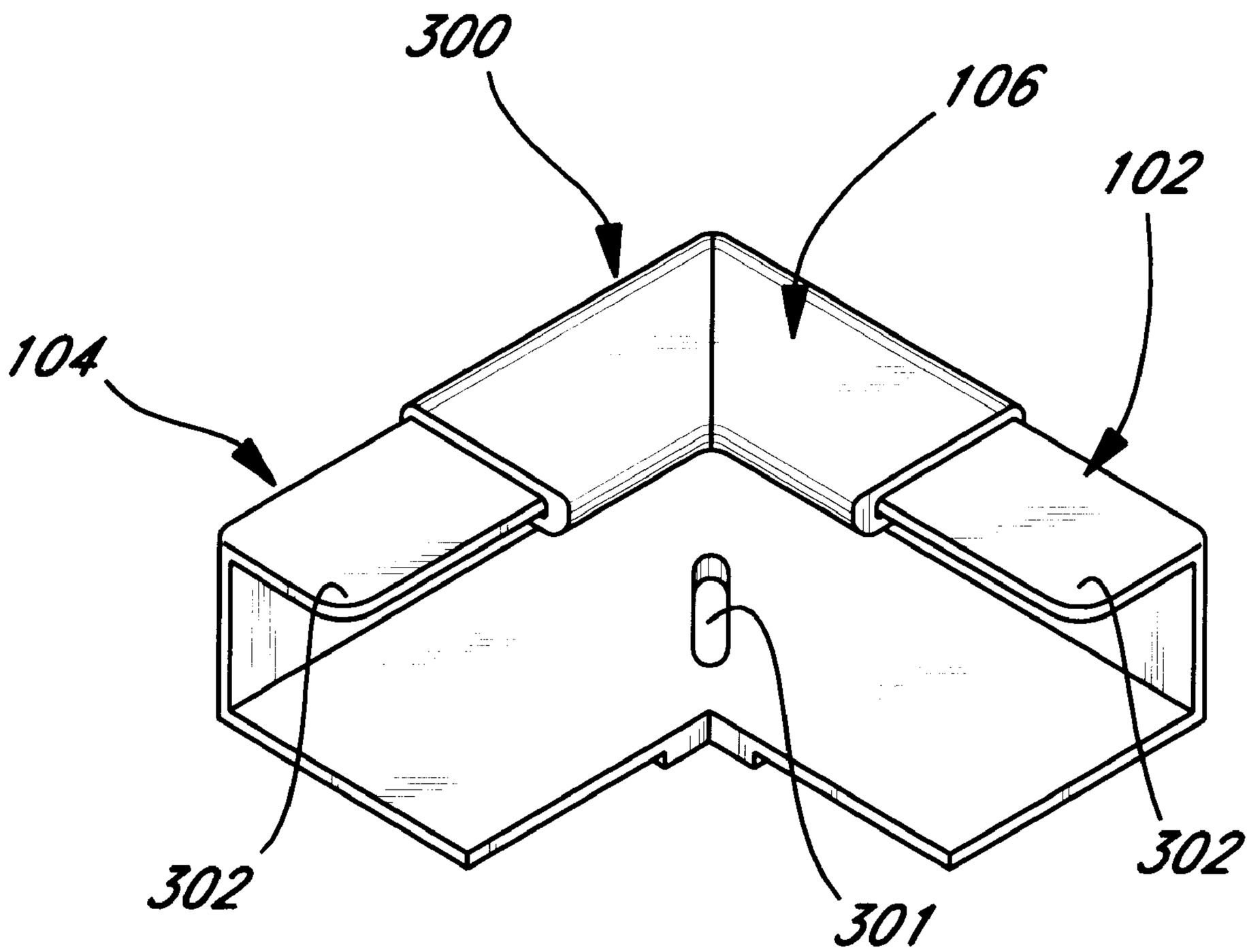
Primary Examiner—Carl D. Friedman
Assistant Examiner—Yvonne Horton-Richardson
Attorney, Agent, or Firm—John J. Connors; Connors & Assoc.

[57] **ABSTRACT**

A corner connector for siding retainers having a unitary structure includes a base plate which is adapted to be attached to a wall that is to be covered with strips of siding. The base plate has a generally orthogonal-shaped edge portion formed by first and second members. Each member has a connecting end and a receiving end over which a siding retainer is adapted to slide and each sized to be received snugly within a channel in a siding retainer slid over an individual member. There is a corner section to which the connecting ends of the first and second members are joined so that the first and second members are at an angle of substantially 90°. The corner section has raised segments where each of the connecting ends join the corner section. The raised segments serve as stops which abut an end of a retainer slid over an individual member.

8 Claims, 7 Drawing Sheets



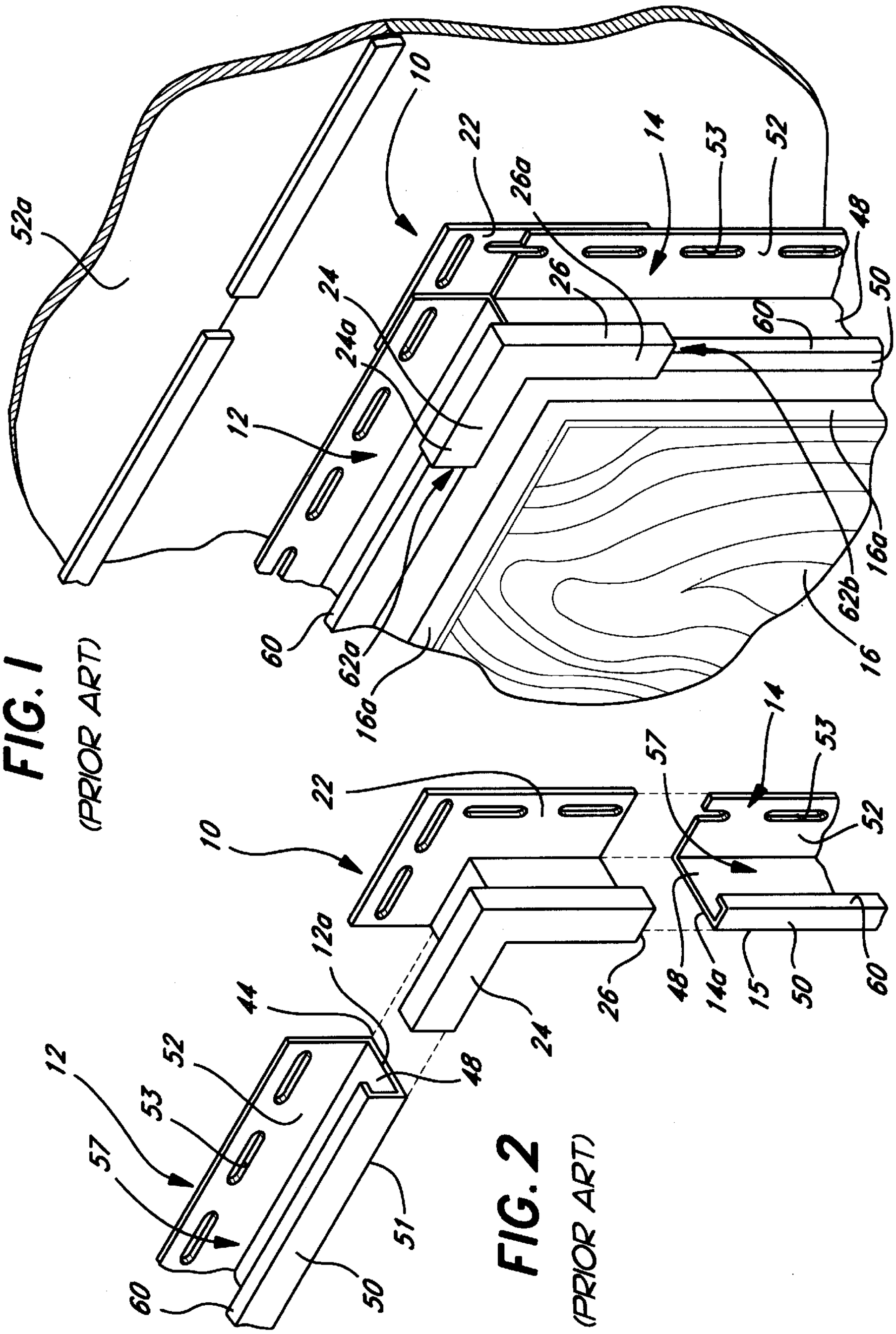


FIG. 1
(PRIOR ART)

FIG. 2
(PRIOR ART)

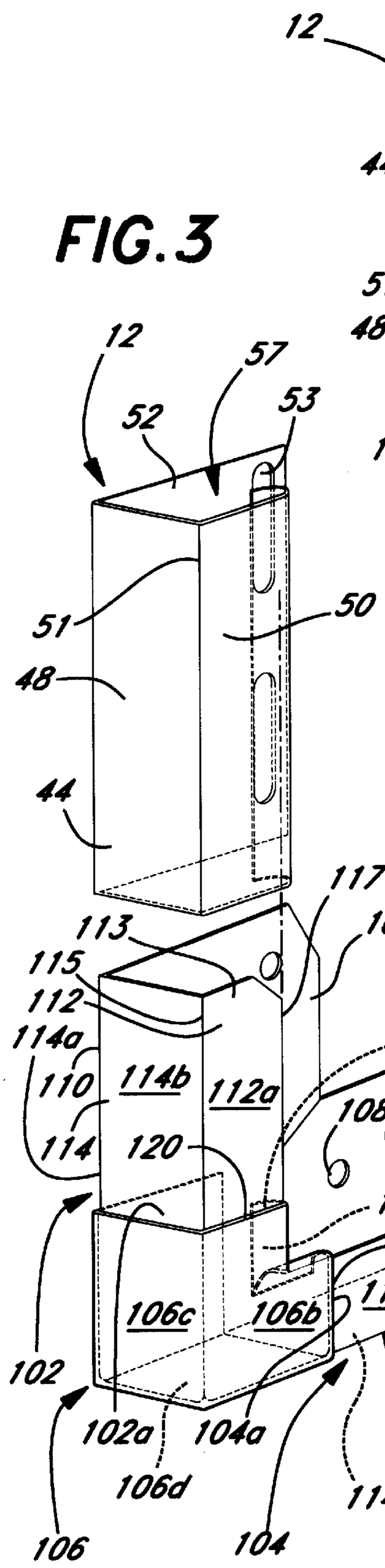

12
57
52
53
48
51
50
44
102
117
108
113
115
112
114a
110
114b
112a
114
120
105
122
106c
106b
112a
114a
115
102
102a
104a
106d
114c
106
104
5
106a
108a
60
112A
14

FIG. 3

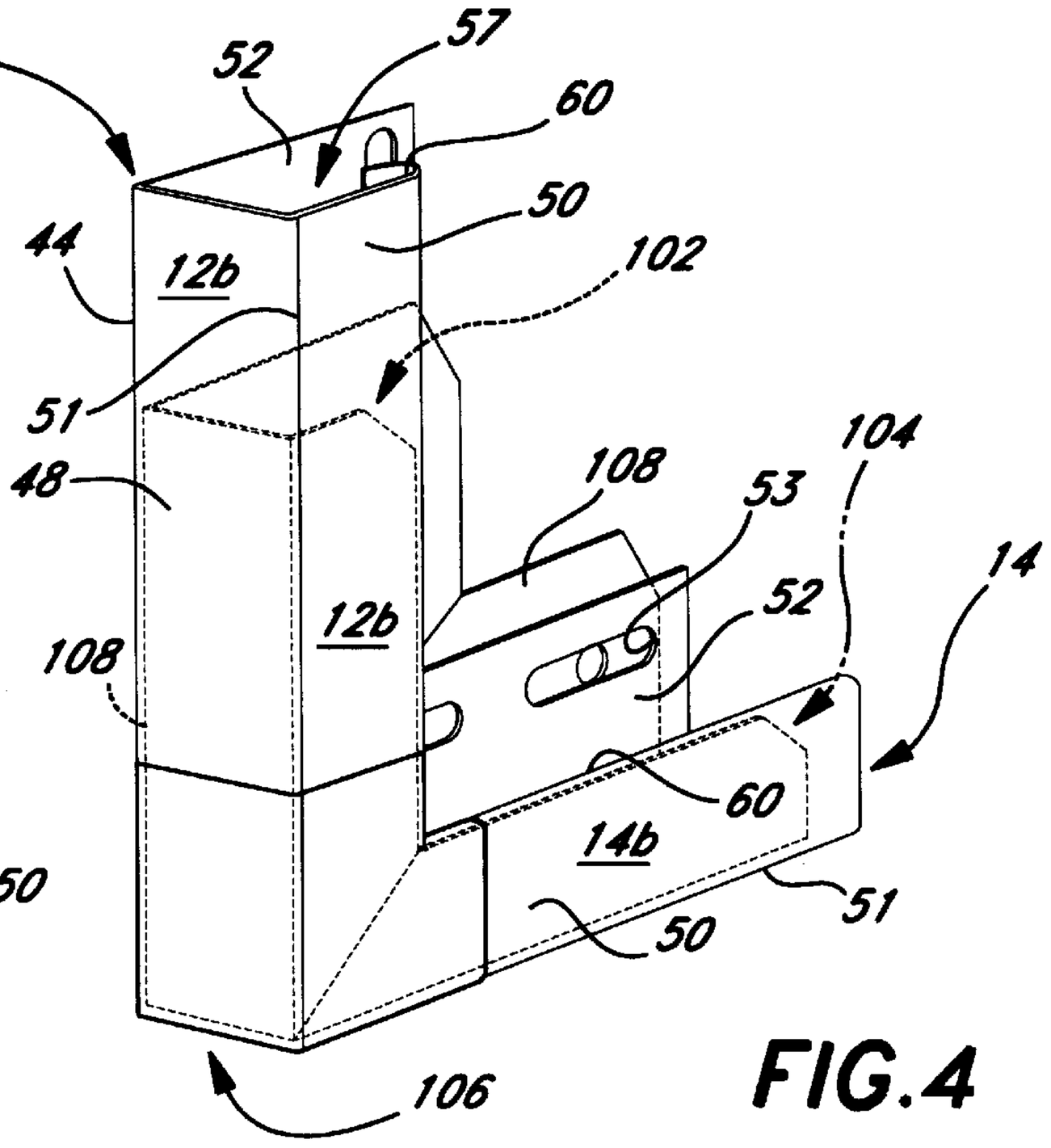

12
57
52
60
50
44
12b
102
51
48
108
53
104
14
52
108
12b
60
14b
51
50
106

FIG. 4

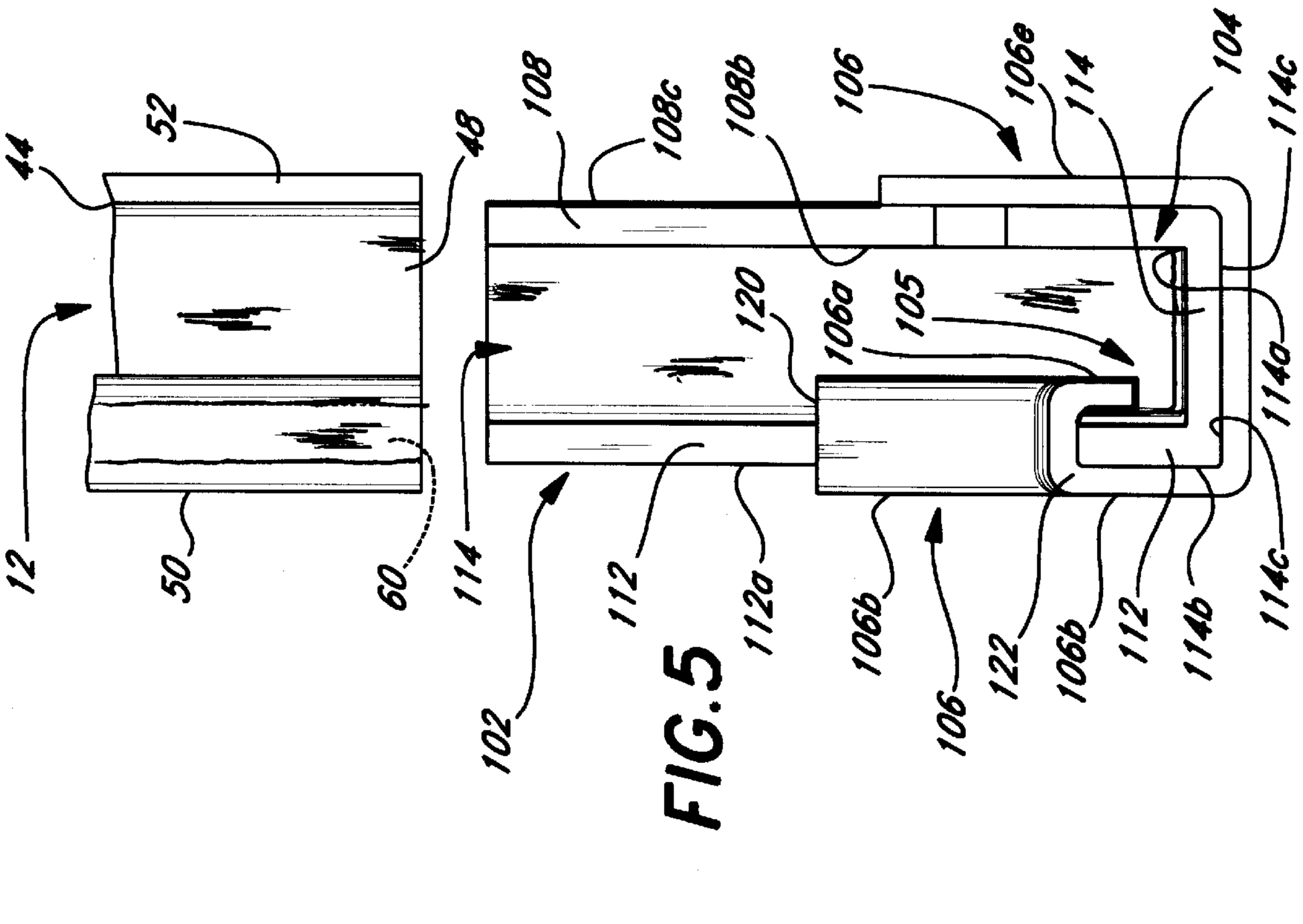

44
52
48
108
108c
108b
106
106e
114
104
114c
12
50
60
114
102
112
112a
120
106a
105
106b
106
122
106b
112
114b
114a
114c

FIG. 5

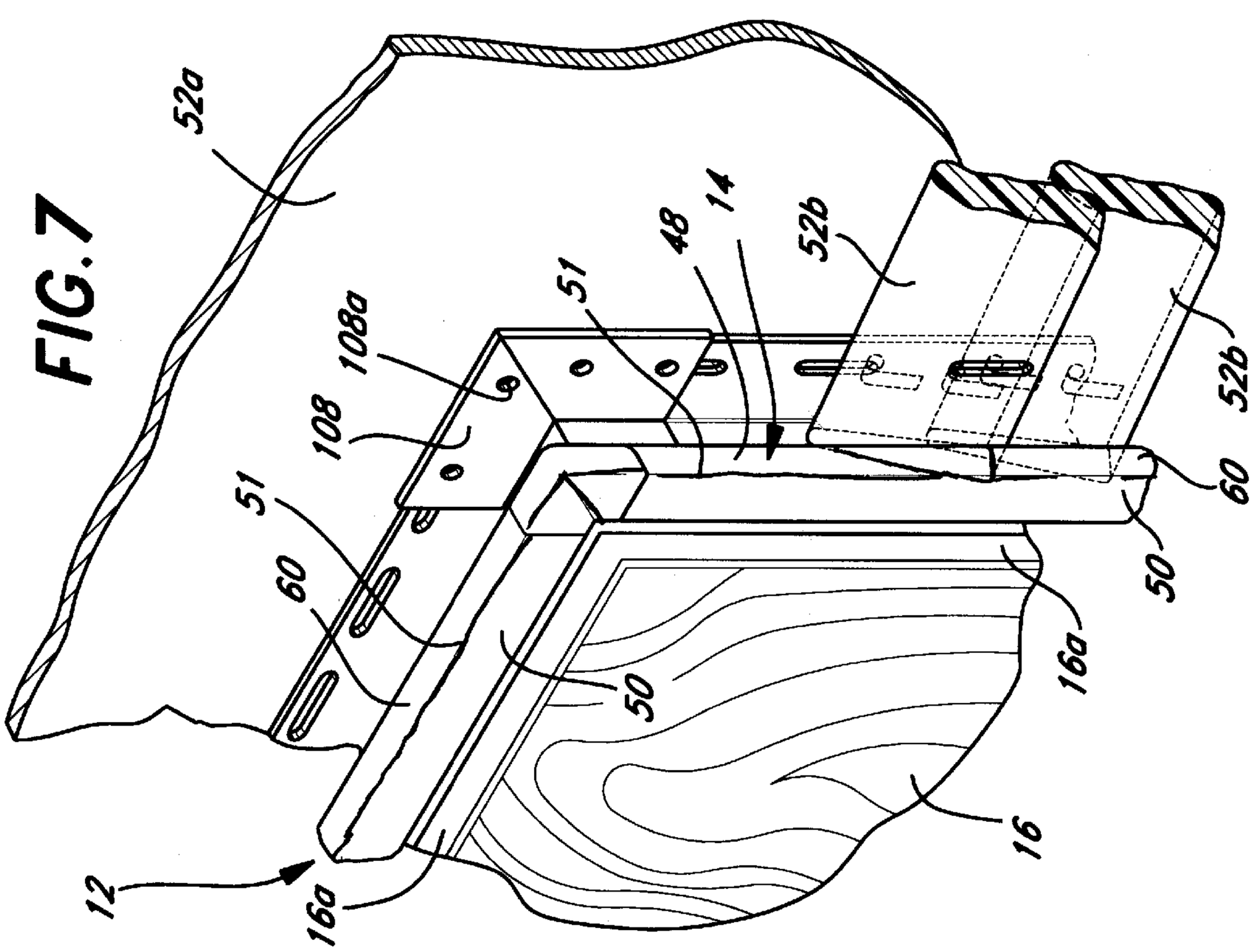

52a
48
14
52b
51
108a
108
51
60
50
16a
16
12
16a
52b
50

FIG. 7

FIG. 6

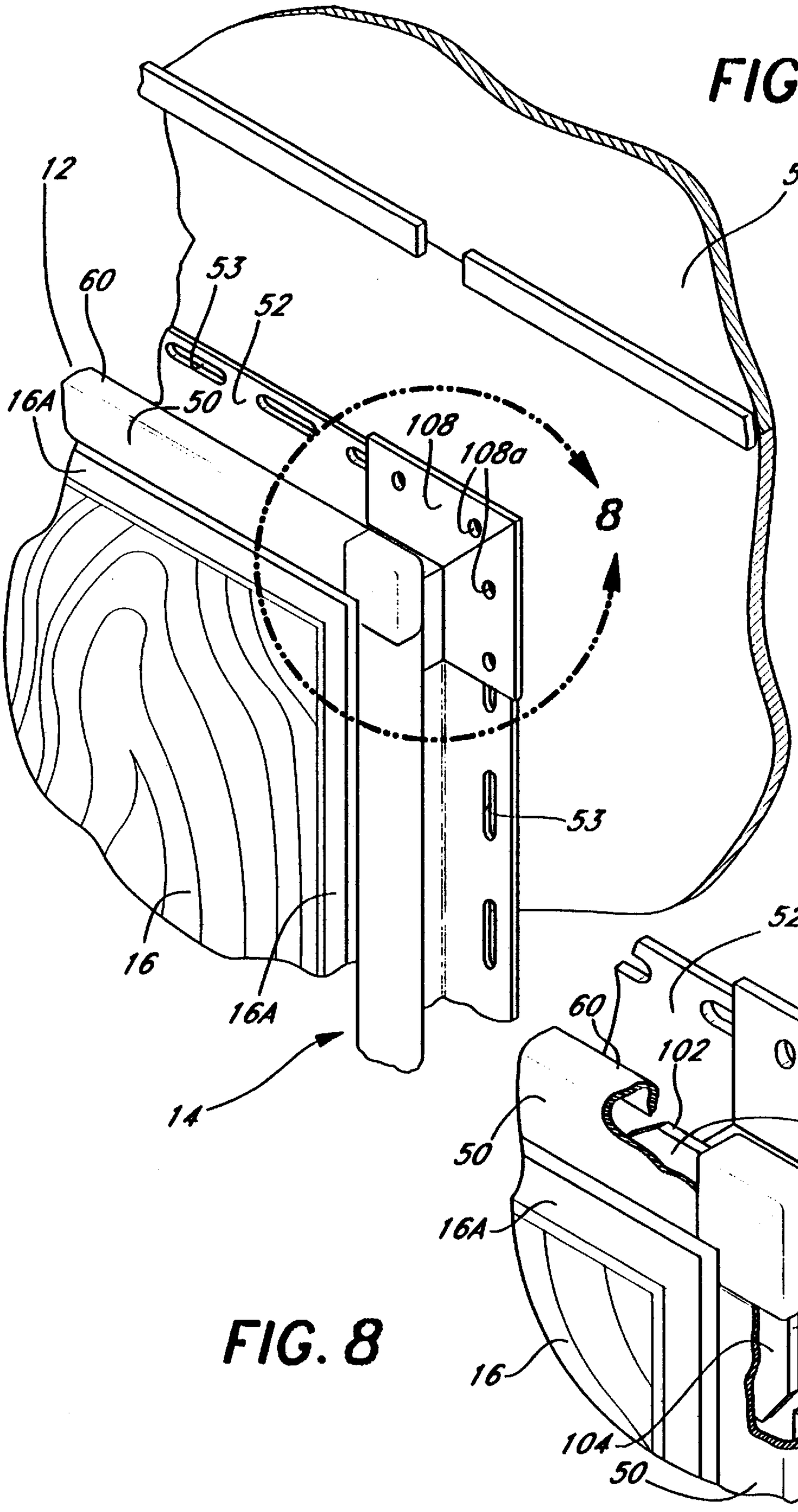
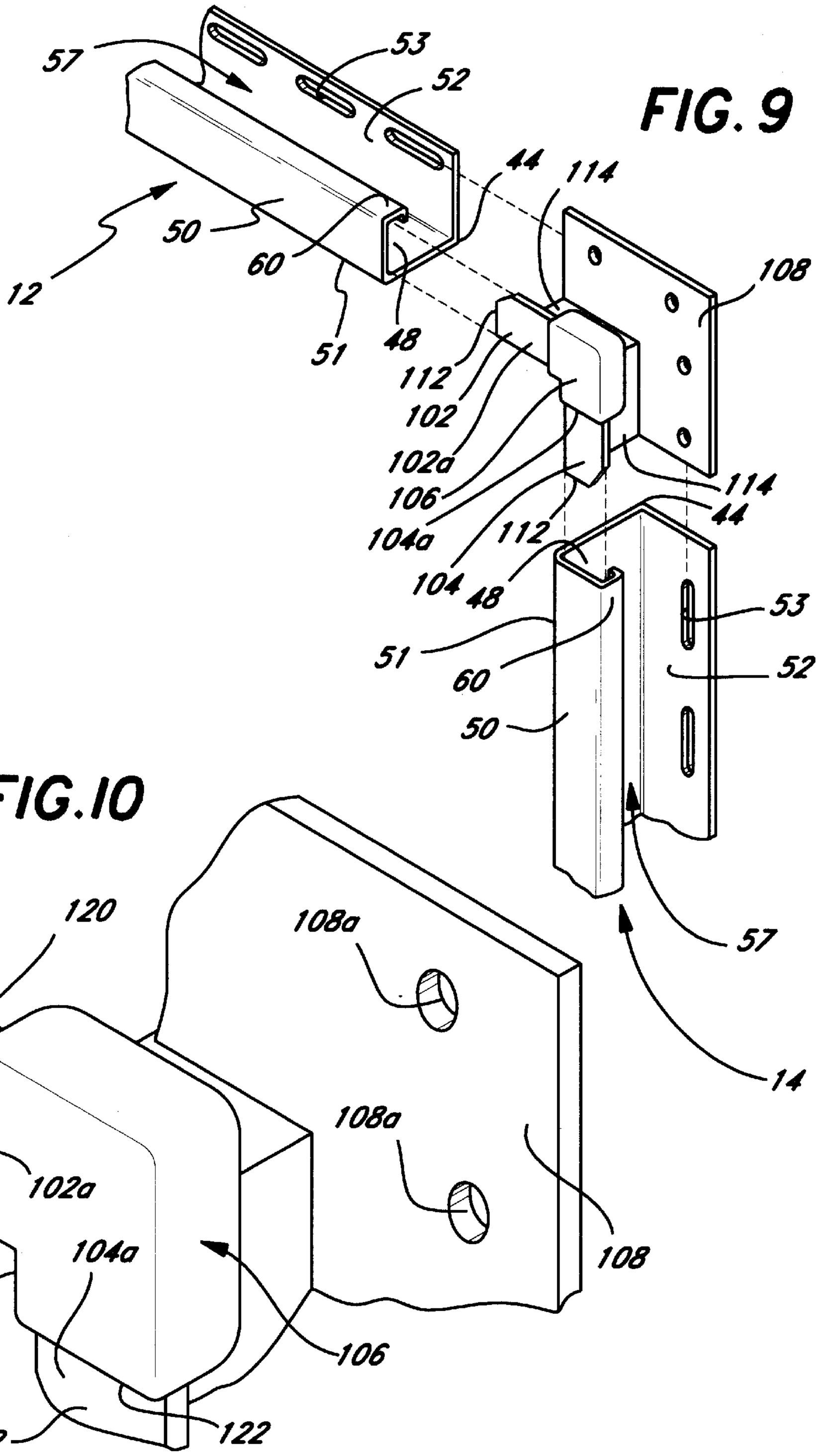

12
52a
60
53
52
16A
50
108
108a
8
53
16
16A
14
52
108
60
102
102A
50
16A
104A
60
16
53
104
52
50
48

FIG. 8


57
53
52
44
114
50
60
12
108
51
48
112
102
102a
106
104a
112
114
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104
48
53
51
52
60
50
57
14
112
120
108a
108a
102a
104a
108
115
106
112
122

FIG. 9

FIG. 10

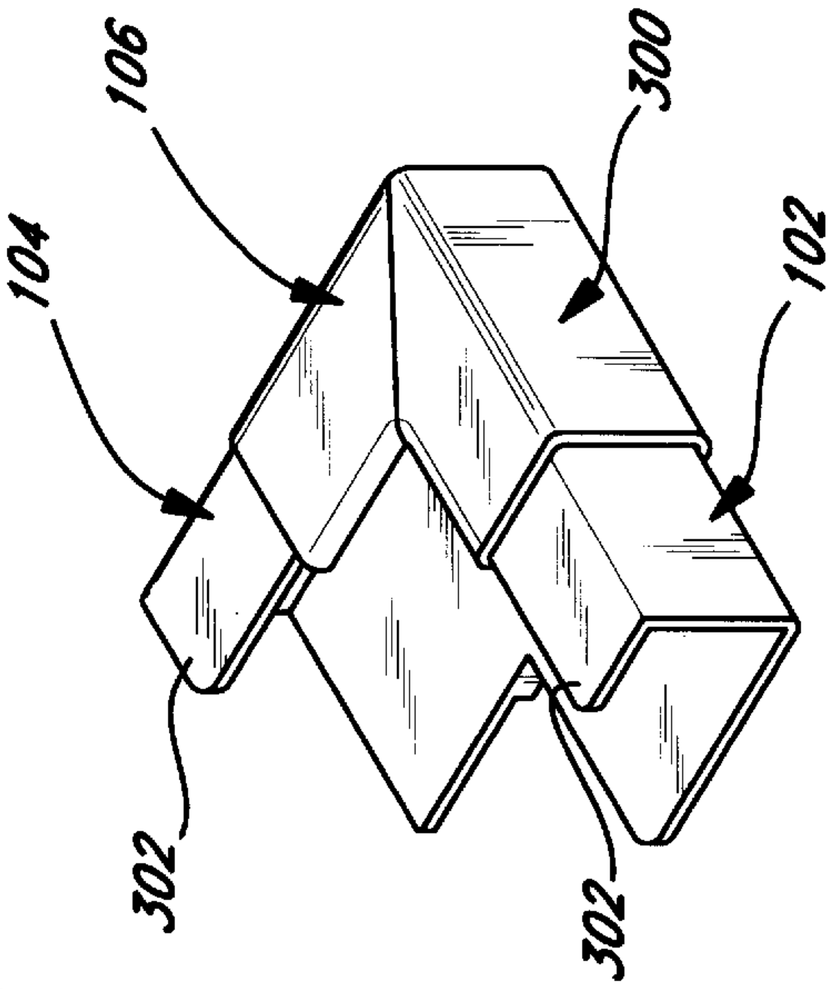


FIG. 11

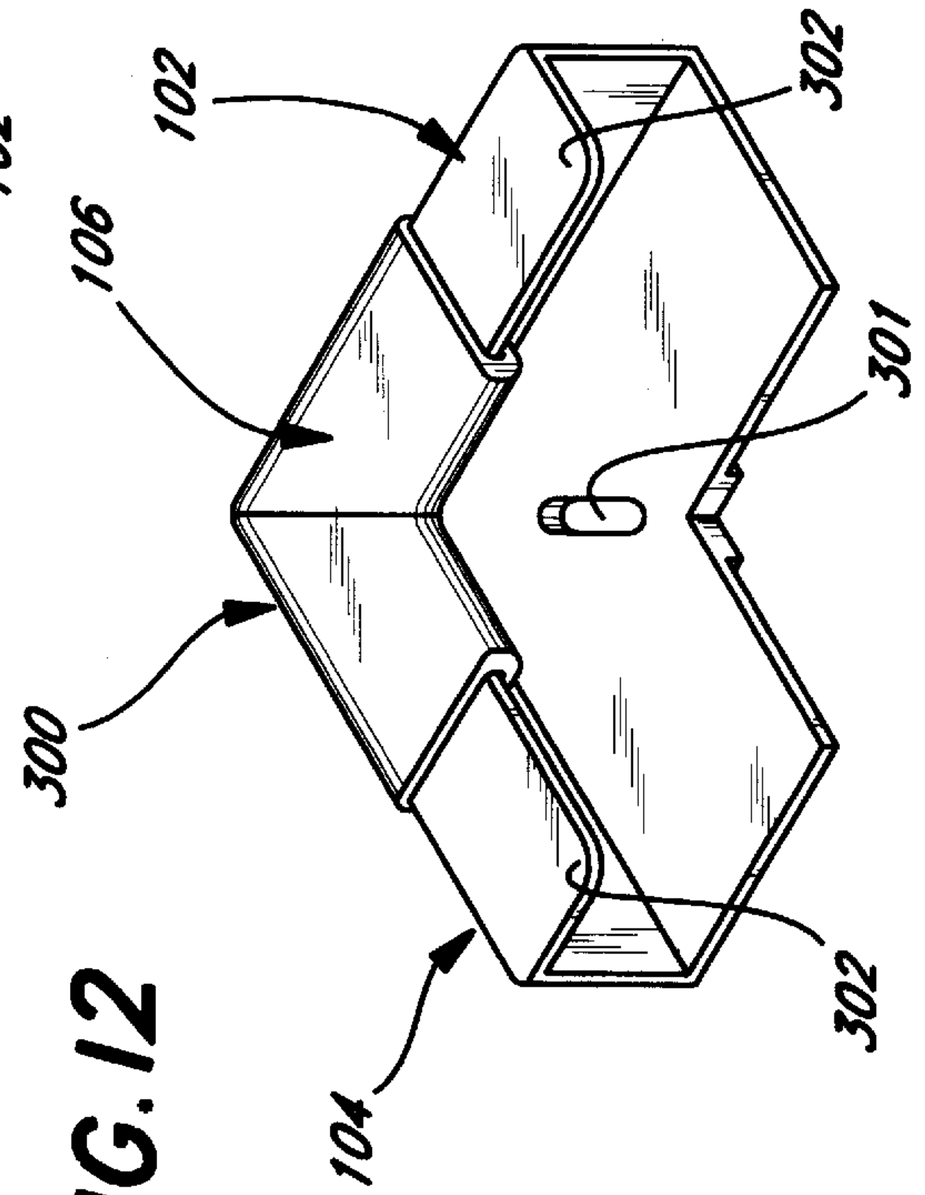


FIG. 12

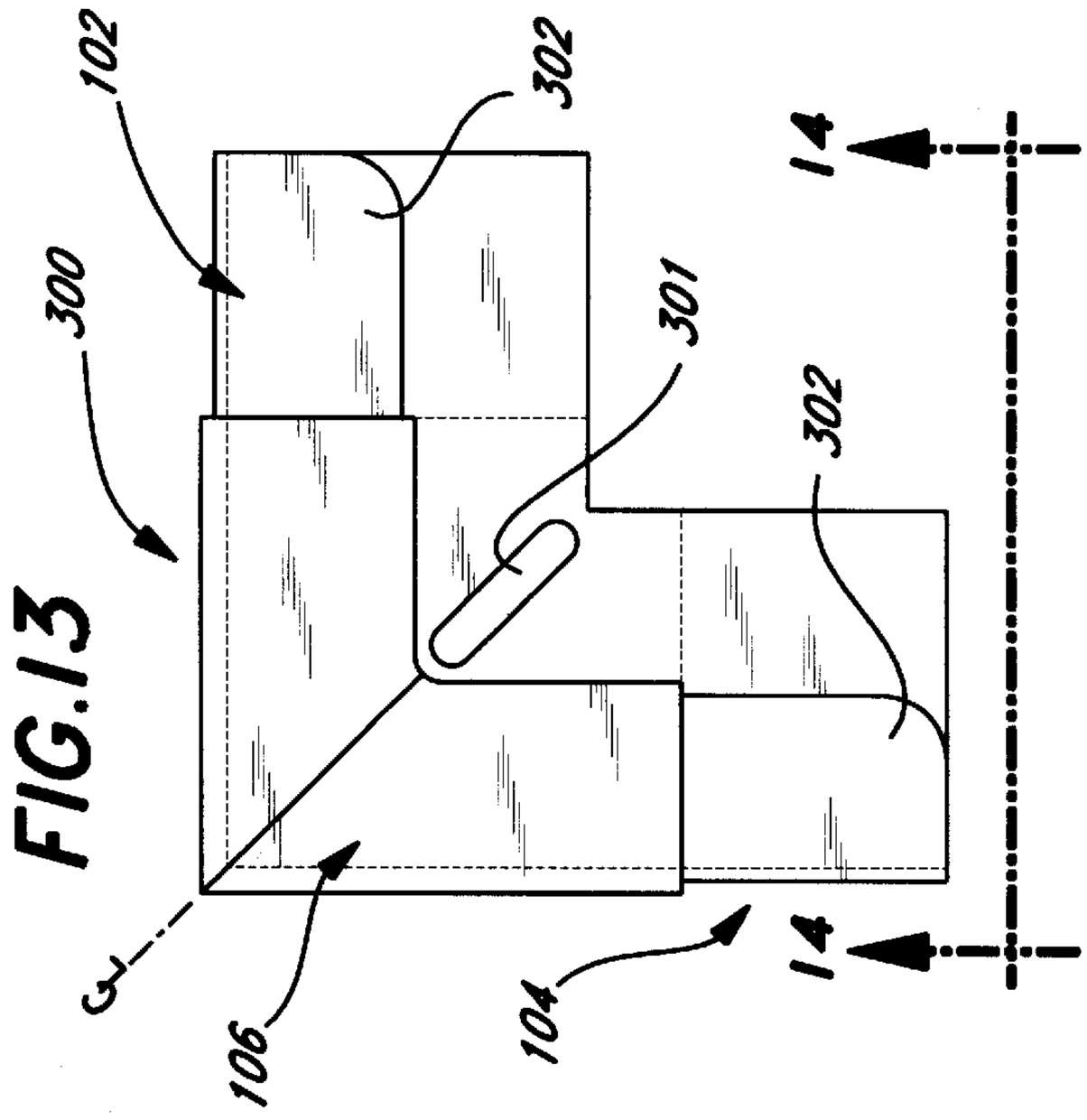


FIG. 13

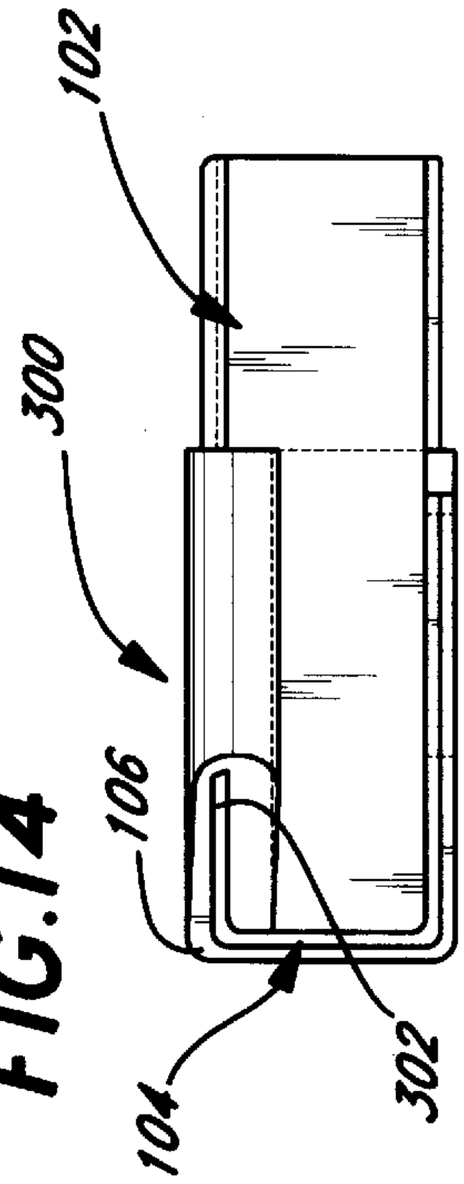
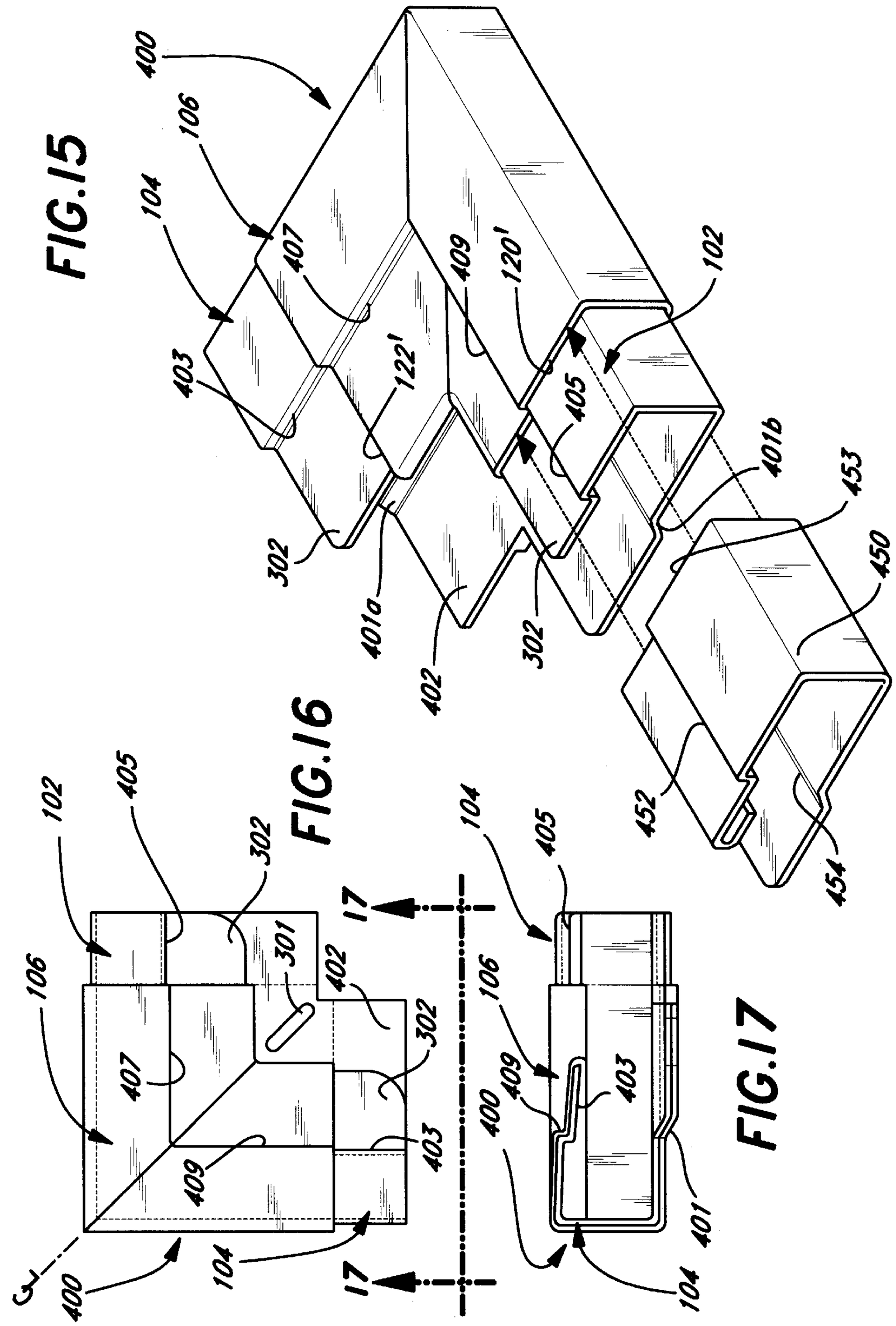


FIG. 14


400
106
104
407
403
409
120'
102
122'
405
302
401a
401b
453
450
402
452
454
FIG.15
FIG.16
17
301
FIG.17

SIDING CORNER CONNECTOR AND METHOD

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a corner connector used to hold siding retainers for framing windows, doors, and other right angle structures, and particularly a corner connector which has improved sealing characteristics that prevent, or minimize, water damage problems and avoid debris and unsightly dirt which normally collect on conventional corner connectors.

2. Background Discussion

Use of strips of siding to cover exterior walls of buildings is a common practice. The siding strips may be made of aluminum, steel, vinyl chloride, or other materials. These strips are fastened to an exterior wall in a conventional manner, with the ends of these strips received in siding retainers having a generally J-shaped configuration and are referred to as J-channels. These siding retainers are fastened along the marginal areas of a right angle structure to frame the right angle structure. Where the ends of the retainers meet at a corner of the right angle structure, the ends are mitered. If the miter is not precise, there is a problem with water leakage. Moreover, it is exceedingly time consuming to make such miters, and if such miters are imprecise, they are unsightly. It has been suggested that the miter operation be eliminated by use of a corner connector disclosed in U.S. Pat. No. 4,608,800 by Richard Fredette.

The Fredette corner connector is fastened at the corner of a window, door, or other right angle structure, and a siding retainer is slipped into a channel in a leg in this corner connector. Although the Fredette corner connector is an advance over the conventional practice of mitering the ends of siding retainers because the time consuming mitering operation is eliminated, because the retainer is slipped within a channel in the corner connector, an inadequate seal in many instances is formed, resulting in water leakage when it rains, and dust and other debris collects along the junction between the siding retainer and an edge of the leg of the Fredette corner connector. Water seeping around the retainer and Fredette corner connector, over time, may produce dry rot in the wall that the siding is suppose to protect.

SUMMARY OF THE INVENTION

It is the objective of this invention to provide a corner connector which enables the siding retainers to be attached in a manner which (1) eliminates excessive leakage and consequent damage to the underlying wall structure, and (2) avoids the collection of unsightly dust and debris where the siding retainer and corner connector meet.

This invention has several features, no single one, of which is solely responsible for its desirable attributes. Without limiting the scope of this invention as expressed by the claims which follow, its more prominent features will now be discussed briefly. After considering this discussion, and particularly after reading the section entitled, "DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS," one will understand how the features of this invention provide its benefits, which include elimination of (1) mitering of the adjoining ends of siding retainers, (2) excessive seepage of water around the corner connector and adjoining siding retainers, and (3) accumulation of dust and debris at the junction of the corner connector and adjoining siding retainers.

The first feature of the corner connector of this invention is that it includes a base plate which is adapted to be attached to a wall that is to be covered with strips of siding. The base plate has a generally orthogonal-shaped edge portion formed by a pair of mounting members over which individual siding retainers are slid.

The second feature is that each member has a connecting end and a receiving end over which a siding retainer is adapted to slide and each member is sized to be received snugly within a channel in a siding retainer slid over an individual mounting member.

The third feature is that the corner connector includes a corner section to which the connecting ends of each mounting member are joined so that the members are at an angle of substantially 90°.

The fourth feature is that the corner section has raised segments where each of the connecting ends of the mounting members join the corner section. The raised segments serve as stops which abut an end of a retainer slid over an individual member.

The fifth feature is that the raised segments of the corner section each have a first portion adjacent to an exterior side of the base plate, a second portion adjacent to an exterior side of the first mounting member, and a third portion adjacent an exterior side of the second mounting member.

The sixth feature is that the corner connector is a unitary structure preferably molded from a polymeric material such as, for example, polyvinyl chloride, nylon, steel, and aluminum.

The seventh feature is that the base plate, first member, second member, and corner section may each have step portions therein. The step portions in the first and second members are aligned with the step portions in the corner section. The step portions in the base plate are parallel to the step portions in the first and second members and in the corner section which overlie the step portions in the base plate.

This invention also includes a method for mounting strips of siding to a wall. This method includes:

(a) providing siding retainers for the strips of siding,

(b) providing a corner connector for the siding retainers, said corner connector having

a base plate which is adapted to be attached to the wall,

the base plate having a generally orthogonal-shaped edge portion formed by

a first and second mounting members, each having a connecting end and a receiving end over which a siding retainer is adapted to slide and each sized to be received snugly within a channel in a siding retainer slid over an individual mounting member, and

a corner section to which the connecting ends of the first and second members are joined so that the first and second members are at an angle of substantially 90°,

the corner section having raised segments where each of the connecting ends join the corner section, the raised segments serving as stops which abut an end of a retainer slid over an individual mounting member,

(c) attaching the base plate to the wall,

(d) sliding one siding retainer over the first mounting member until an end of this one siding retainer abuts one raised segment, and

(e) sliding a second siding retainer over the second member until an end of this second siding retainer abuts another raised segment.

DESCRIPTION OF THE DRAWING

The preferred embodiments of this invention, illustrating all its features, will now be discussed in detail. This embodiment depicts the novel and non-obvious corner connector and method of this invention as shown in the accompanying drawing, which is for illustrative purposes only. This drawing includes the following figures (FIGS.), with like numerals indicating like parts:

FIG. **1** is a perspective view of the Fredette corner connector disclosed in U.S. Pat. No. 4,608,800 attached to a right angle structure.

FIG. **2** is an exploded perspective view of the Fredette corner connector of U.S. Pat. No. 4,608,800 with siding retainers positioned to be slid into channels in the legs of this connector.

FIG. **3** is an exploded perspective view of the first embodiment of this invention showing siding retainers positioned to be slipped onto the corner connector of this invention.

FIG. **4** is a perspective view similar to that of FIG. **3** showing the assembly of the corner connector of this invention with siding retainers attached to it.

FIG. **5** is an end elevational view taken along line **5**—**5** of FIG. **3**.

FIG. **6** is a perspective view of a second embodiment of this invention showing siding retainers attached to the connector of this invention.

FIG. **7** is a perspective view similar to that of FIG. **6** showing the assembly of siding retainers and the second embodiment of the corner connector of this invention, with siding strips positioned in the siding retainers.

FIG. **8** is an enlarged fragmentary view encircled by the line **8** in FIG. **6**.

FIG. **9** is an exploded perspective view of the second embodiment of this invention showing the siding retainers positioned to be slid over the connector of this invention.

FIG. **10** is an enlarged fragmentary view of the corner segment of the corner connector shown in FIG. **9**.

FIG. **11** is a perspective rear view of a third embodiment of this invention similar to the first embodiment shown in FIG. **3**.

FIG. **12** is a perspective front view of a third embodiment of this invention shown in FIG. **11**.

FIG. **13** is a plan view of the third embodiment of this invention shown in FIGS. **11** and **12**.

FIG. **14** is an end elevational view of the third embodiment of this invention taken along line **14**—**14** of FIG. **13**.

FIG. **15** is a perspective rear view of a forth embodiment of this invention similar to the third embodiment shown in FIG. **11**, but having step portions therein.

FIG. **16** is a plan view of the forth embodiment of this invention shown in FIG. **15**.

FIG. **17** is an end elevational view of the forth embodiment of this invention taken along line **17**—**17** of FIG. **16**.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Prior Art

As shown in FIGS. **1** and **2**, the Fredette piece or corner connector **10** disclosed in U.S. Pat. No. 4,608,800 includes a pair of legs or channel members **24** and **26** at 90 degrees with respect to each other. These channel members **24** and **26** are attached to a base plate **22** which is secured by nails or other means to a wall **52***a* adjacent a right angle structure such as, for example, a door **16**. The Fredette corner connector **10** is fastened at the corner of the door frame **16***a* for the door **16**, and one siding retainer **12** is slid into one channel member **24**, and another other siding retainer **14** is slid into the other channel member **26**.

Each siding retainer **12** and **14** has a mounting plate **52** with slots **53** and a first element or leg **48** and a second element or leg **50**. The first leg **48** extends outward from the mounting plate **52** along an edge **44** at an angle of substantially 90°. The second leg **50** is joined along a common junction **51** to the first leg **48** at an angle of substantially 90° and is substantially parallel to the mounting plate **52** and is oriented in a direction to form a generally right angle shaped channel **57**. The longitudinal edge of the leg **50** is curled inward to form a U-shaped lip **60**. The ends **12***a* and **14***a*, respectively, of the siding retainers **12** and **14** are at a right angle with respect to the longitudinal axes of the legs **48** and **50** and each leg **48** and **50** has a predetermined width, approximately from 0.5 to 1.0 inch, typically ¾ inch and a thickness of about 1/16 inch. The widths of the legs **48** and **50** are less than the widths of the channels in the channel members **24** and **26**, allowing the retainers **12** and **14** to be received within these channel members. Thus, as shown in FIG. **1**, the end portions **24***a* and **26***a* of the channel members **24** and **26**, respectively, overlap the legs **48** and **50** creating steps **62***a* and **62***b*, respectively. This arrangement is defective because a gap forms between the exterior surface of the side of the siding retainers **12** and **14** adjacent a wall or other structure and water seeps into this gap. Consequently, there is significant water leakage around the assembled siding retainers **12** and **14** and corner connector **10**. Also, the steps **62***a* and **62***b* collect dirt and debris, resulting in an eyesore.

First Embodiment of the Invention

As shown in FIGS. **3** through **5**, the first embodiment of this invention is a corner connector **100** designed to be placed at an inside corner of a right angle structure **8**. This corner connector preferably is a unitary structure and formed by molding it using conventional injection molding techniques from a polymeric material.such as, for example, polyvinyl chloride, nylon, steel, and aluminum.

The corner connector **100** includes a pair of mounting members **102** and **104** which extend outward from a corner section **106**. In contrast to the Fredette corner connector **10**, the siding retainers **12** and **14** slide over the exterior of the mounting members **102** and **104** to attach the retainers to the connector **100**. The members **102** and **104** each have, respectively, connecting ends **102***a* and **104***a* which join the corner section **106** in a manner to orient the mounting members with respect to each other at an angle of substantially 90°. Each mounting member **102** and **104** has a receiving end **102***b* and **104***b*, respectively, over which the retainers **12** and **14**, respectively, slide. The retainers **12** and **14** are aligned, respectively, with the receiving ends receiving ends **102***b* and **104***b* and manually pushed onto the members **102** and **104** to force these members into the channels **57** of the retainers. The members **102** and **104** are sized so that there is a snug fit between the members **102** and **104** and the retainers **12** and **14**. Free edges **117** of the planar elements **112** and **114** fit into the U-shaped lip **60** as the retainers are slid over the mounting members **102** and **104**.

The corner connector **100** includes a base plate **108** which has a generally L-shaped configuration and a generally

orthogonal-shaped edge portion **110**. This base plate **108** has holes **108***a* for nails or other types of fasteners to attach the corner connector **100** to the wall **52***a*. Each mounting member **102** and **104** comprises a pair of elongated, planar elements **112** and **114** connected at a common junction **115** at an angle of substantially 90° with respect to each other. The one planar member **114** has an edge **114***a* which is connected to the edge portion **110** of the base plate **108**. Preferably, the ends **113** of the planar elements **112** are chamfered. This assist in sliding the retainer **12** and **14**, respectively, over the mounting members **102** and **104**.

The corner section **106** generally has an orthogonal configuration that has raised segments **120** and **122** where the mounting members **102** and **104** join the corner section. As best illustrated in FIGS. **3** and **5**, these raised segments **120** and **122** are the edges the corner section **106**. The corner section **106** has multiple surfaces: (1) a substantially L-shaped internal piece **105** that has a substantially flat, L-shaped face surface portion **106***a* adjacent and parallel to an exterior side **108***b* of the base plate **108**; (2) a substantially flat, rectangular, face surface portion **106***b* adjacent and parallel to exterior sides **112***a* of the planar elements **112**; (3) a substantially flat, rectangular, face surface portion **106***c* adjacent and parallel to the one exterior side **114***b* of the one planar element **114** which is part of the mounting member **102**; (4) a substantially flat, rectangular, face surface portion **106***d* adjacent and parallel to the exterior side **114***c* of the planar element **114** which is part of the mounting member **104**; and (5) a substantially flat, rectangular, face surface portion **106***e* adjacent and parallel to an interior side **108***c* of the base plate **108**.

Because of the configuration of the corner section **106**, the planar elements **112** and **114** are consequently offset with respect to the surfaces **106***a* through **106***e*. The heights of the raised segments **120** and **122** are approximately equal to the thickness of the mounting plate **52** and the legs **48** and **50** of the retainers **12** and **14**, so that, when the retainers are attached to the corner connector **110** as illustrated in FIG. **4**, the exterior surfaces **12***b* and **14***b* (FIG. **4**) of the retainers are essentially flush with the surfaces **106***a* through **106***e* of the corner section **106**. The one planar member **112** has a width slightly less than the width of the one leg **50** of the retainer, and the other planar element **114** has a width slightly less than the width of the other leg **48** of the retainer element. Consequently, when the retainers **12** and **14** is slid, respectively, over the members **102** and **104**, (1) the mounting plates **52** for the retainers slide underneath the base plate **108** of the corner connector **100**, and (2) the one leg **50** of each retainer **12** and **14** slides over the planar element **112**, and the other leg **48** of each retainer slides over the planar element **114**.

The siding strips **52***b* are positioned within the retainers **12** and **14** so that the ends of individual siding strips fit in the channels **57** provided by the siding retainers. With the retainers **12** and **14** on the exterior of the mounting members **102** and **104** an essentially continuous barrier is provided by this assembly of corner connector **100** and attached retainers **12** and **14**. Consequentially, there is a much better seal between the siding retainers **12** and **14** and the exterior surfaces of the siding strips **52***b*, avoiding or minimizing leakage. Also, since the exterior surfaces of the siding retainers **12** and **14** are flush with the corner section **106**, dirt and debris does not tend to collect at this junction. Instead the ends of the siding retainer abut the raised segments **120** and **122**.

Second Embodiment of the Invention

FIGS. **6** through **10** depict an alternate embodiment of this invention similar to that shown in FIGS. **3** through **5**, except the mounting members **102** and **104** are oriented so that a corner connector **200** is provided that is placed at an outside corner of a right angle structure. Except for this change in orientation of the mounting members **102** and **104**, the corner connector **200** is essentially identical to that of the corner connector **100**.

Third Embodiment of the Invention

As shown in FIGS. **11** through **13**, the third embodiment of this invention is a corner connector **300** similar to the corner connector **100**. The corner connector **300** includes a pair of mounting members **102** and **104** which extend outward from a corner section **106**. The main differences between the first and third embodiments is that an elongated slot **301** provides access for mounting the connector **300** to a wall or the like, and the corners **302** are rounded.

Forth Embodiment of the Invention

As shown in FIGS. **15** through **17**, the forth embodiment of this invention is a corner connector **400** similar to the corner connector **300**. The corner connector **400** includes step portions **401***a* and **401***b* in the base plate **402**, a step portion **403** in the mounting member **104**, a step portion **405** in the mounting member **102**, and step portions **407** and **409** in the top surface of the corner section **106**. The step portions **401***a* and **401***b* in the base plate **402** intersect at their inner ends (not shown) to form a right angle with respect to each other, and the step portions **407** and **409** intersect at their inner ends to form a right angle with respect to each other. Raised segments **120'** and **122'** are formed which differ from the raised segments **120** and **122** of the first embodiment in that there are steps therein.

A pair of siding retainers **450** (only one shown) are used with the corner connector **400**. Each siding retainer **450** employs steps **452** and **454** which correspond to the steps in the corner connector **400**. In other words, the siding retainers **450** each have a cross-sectional configuration essentially the same as the cross-sectional configuration of the mounting members **102** and **104** in the corner connector **400**, but slightly larger so that the siding retainers **450** easily slid over the mounting members **102** and **104** of the corner connector **400**. For example, the sliding retainer **450** has the steps **452** and **454**. These steps **452** and **454** engage the steps **405** and **401**(*b*), respectively, as the siding retainer **450** slides over the mounting member **102**. The inside edge **453** of the siding retainer **450** abuts the raised segment **120'** when this inside edge is pushed against this raised segment.

Scope of the Invention

The above presents a description of the best mode contemplated of carrying out the present invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains to make and use this invention. This invention is, however, susceptible to modifications and alternate constructions from that discussed above which are fully equivalent. Consequently, it is not the intention to limit this invention to the particular embodiment disclosed. On the contrary, the intention is to cover all modifications and alternate constructions coming within the spirit and scope of the invention as generally expressed by the following claims, which particularly point out and distinctly claim the subject matter of the invention.

We claim:

1. A method for mounting strips of siding to a wall including

(a) providing siding retainers for the strips of siding,

(b) providing a corner connector for the siding retainers, said corner connector having

a base plate which is adapted to be attached to the wall, said base plate having a generally orthogonal-shaped edge portion formed by

a first and second members each having a connecting end and a receiving end over which a siding retainer is adapted to slide and each sized to be received snugly within a channel in a siding retainer slid over an individual member, and

a corner section to which the connecting ends of the first and second members are joined so that the first and second members are at an angle of substantially 90°,

said corner section having raised segments where each of said connecting ends join the corner section, said raised segments serving as stops which abut an end of a retainer slid over an individual member,

(c) attaching the base plate to the wall,

(d) sliding one siding retainer over the first member until an end of said one siding retainer abuts one raised segment, and

(e) sliding a second siding retainer over the second member until an end of said second siding retainer abuts another raised segment.

2. The method of claim **1** where the corner connector is formed as a unitary structure molded from a polymeric material.

3. The method of claim **1** where the corner connector is formed from polyvinyl chloride, nylon, steel, or aluminum.

4. The method of claim **1** where the raised segments are edges of the corner section and said corner section has a first surface portion adjacent an exterior side of the base plate, a second surface portion adjacent an exterior side of the first member, a third surface portion adjacent an exterior side of the second member, and a fourth surface portion adjacent an interior side of the base plate.

5. The method of claim **1** where the siding retainers each have a mounting plate, a first leg extending outward from the mounting plate at an angle of substantially 90°, a second leg joined along a common junction to the first leg at an angle of substantially 90° and substantially parallel to the mounting plate and oriented in a direction to form a generally right angle shaped channel, each leg having a predetermined width.

6. The method of claim **5** where

the first member comprises a first pair of elongated, planar elements joined along a common junction at an angle of substantially 90°, one of said elongated elements of said first pair having an edge which is joined to the base plate at an angle of substantially 90° and the other of said elongated elements of said first pair being substantially parallel to the base plate and extending inward toward the base plate, said one of said elongated elements of the first pair having a width which is slightly less than the width of the first leg of the one retainer and the other of said elongated elements of the first pair having a width which is slightly less than the width of the second leg of the one retainer, so that, when the one retainer is slid over the first member, the first member is received snugly within the channel of the one retainer,

the second member comprises a second pair of elongated, planar elements joined along a common junction at an angle of substantially 90°, one of said elongated elements of said second pair having an edge which is joined to the base plate at an angle of substantially 90° and the other of said elongated elements of said second pair being substantially parallel to the base plate and extending inward toward the base plate, said one of said elongated elements of the second pair having a width which is slightly less than the width of the first leg of the second retainer and the other of said elongated elements of the second pair having a width which is slightly less than the width of the second leg of the second retainer, so that, when the second retainer is slid over the second member, the second member is received snugly within the channel of the second retainer,

said first and second members each having a connecting end and a receiving end, said receiving end of the first member being disposed within the channel of the one retainer and said receiving end of the second member being disposed within the channel of the second retainer.

7. The method of claim **6** where the first and second raised segments each have a predetermined height and the legs of the one retainer and second retainer each have a thickness which is substantially equal to said height.

8. The method of claim **6** where each second leg of the one retainer and second retainer has a U-shaped lip into which a free edge of the other of the elongated elements is received.

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